

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-14 (Cancelled)

15. (Currently amended) A patient support apparatus comprising:

~~a base frame~~ a first component;

~~an elevating frame~~ a second component configured to move relative to said first component along a path of travel ~~above said base frame;~~

~~a patient support surface supported by said elevating frame;~~

a detection unit comprising:

a single emitter supported by one of said first and second components and

~~a detector~~ a plurality of detectors supported by ~~one the other~~ of said ~~elevating frame and said base frame~~ first and second components, said ~~receiver~~ detectors configured to ~~detect an obstacle within said path of travel of said elevating frame and~~ provide a control signal in response ~~thereto~~ to an obstacle within said path of travel between the emitter and any one of the plurality of detectors; and

a control unit in communication with said detector and configured to prevent ~~lowering relative movement~~ of the ~~elevating frame~~ first and second components in response to said control signal.

16. (Currently amended) The patient support apparatus of claim 15, ~~further comprising an emitter supported by one of said base frame and said elevating frame, wherein said emitter configured to generate~~ generates a wireless an obstacle detection signal.

17. (withdrawn) The patient support apparatus of claim 16, wherein said emitter is supported by said base frame and said detector is supported for movement with said elevating frame.

18. (withdrawn) The patient support apparatus of claim 15, wherein said detector comprises a camera configured to capture images of said elevating frame along said path of travel.

19. (withdrawn) The patient support apparatus of claim 18, wherein said control unit is configured to compare the images captured by said camera to predefined images to determine the presence of an obstacle within said path of travel.

20. (withdrawn) The patient support apparatus of claim 15, wherein said detector comprises a force sensing tape switch including elongated upper and lower contacts, said force sensing tape switch being coupled to the base frame.

21. (Currently amended) The patient support apparatus of claim 15, wherein said emitter comprises an infrared ~~light~~ source.

22. (Canceled)

23. (currently amended) The patient support apparatus of claim ~~22~~ 15, ~~further~~ comprising a lifting device configured to move said ~~elevating frame~~ second component vertically relative to said ~~base frame~~ first component and wherein said control unit deactivates said lifting device if any one of said plurality of detectors fails to detect a signal emitted by said single emitter ~~+~~ frame.

24. (Canceled)

25. (withdrawn) The patient support apparatus of claim 22, wherein said emitter generates an optical curtain positioned intermediate said base frame and said elevating frame.

26. (Canceled)

27. (withdrawn) The patient support apparatus of claim 26, further comprising a lens positioned proximate said infrared light source and configured to convert light emitted from said infrared light source to an optical curtain.

28. (withdrawn) The patient support apparatus of claim 27, wherein said lens comprises a fresnel lens.

29. (withdrawn) The patient support apparatus of claim 22, wherein said wireless signal includes a modulated signal and said control unit compares said modulated signal

to a predefined verification signal to prevent interference from external light sources.

30. (withdrawn) The patient support apparatus of claim 22, wherein said receiver is configured to move with said elevating frame within a predefined vertical range.

31. (withdrawn) The patient support apparatus of claim 30, wherein said predefined vertical range is from said base frame to said elevating frame when said elevating frame is in a fully raised position.

32. (Currently amended) The patient support apparatus of claim ~~22~~ 15, further comprising an indicator ~~in communication with the control unit, said indicator~~ configured to indicate failure of ~~said receiver to detect said wireless signal~~ any one of said plurality of detectors to detect an obstacle detection signal emitted by said single emitter.

33. (Currently amended) The patient support apparatus of claim ~~22~~ 16, wherein said ~~wireless~~ obstacle detection signal includes a pulsed portion having a predefined frequency, and said ~~receiver~~ detector is configured to detect said predefined frequency.

34. (Currently amended) The patient support apparatus of claim 33, wherein said predefined frequency is approximately 57 ~~MHz~~ KHz.

35. (Currently amended) The patient support apparatus of claim ~~34~~ 33, wherein said pulsed portion has a duration of approximately 600 microseconds followed by a delay of approximately 2 milliseconds.

36. (Canceled)

37. (withdrawn) The patient support apparatus of claim 36, wherein at least one of said receivers is supported for movement with said elevating frame.

38. (withdrawn) The patient support apparatus of claim 37, wherein said emitter is supported by said base frame.

39-60. (cancelled)

61. (Currently amended) A method of preventing movement of a component of a ~~patient support surface~~ bed upon detection of an obstacle within a path of travel of the component, said method comprising the steps of:

~~providing a patient support apparatus including a the bed having the movable component;~~

~~providing a detection unit comprising a single emitter and a plurality of detectors;~~

~~generating a detectable wireless causing the emitter to emit an obstruction detection signal in response to an obstacle within a the path of travel between the emitter and any one of the detectors of said component;~~

~~providing a receiver for detecting said wireless signal;~~

moving said ~~patient support surface~~ component;

generating a stop signal if at least one of said ~~receiver~~ detectors fails to detect said ~~wireless obstacle detection~~ signal; and

preventing movement of said ~~patient support surface~~ component in response to said stop signal.

62. (Currently amended) The method of claim 61, wherein said step of generating a ~~detectable~~ wireless signal comprises the steps of providing a light source and emitting infrared light from said light source.

63. (withdrawn) The method of claim 62, further comprising the step of placing a lens proximate said light source for converting light emitted from said light source to said wireless curtain.

64. (withdrawn) The method of claim 62, wherein said wireless signal includes a modulated signal and said receiver compares said modulated signal to a predefined verification signal to prevent interference from external light sources.

65. (withdrawn) The method of claim 61, wherein said receiver is configured to move with said elevating frame within a predefined vertical range.

66. (withdrawn) The method of claim 61, further comprising the step of activating an indicator in response to said stop signal.

67. (original) The method of claim 61, wherein said movable component includes an articulating deck movable relative to an elevating frame, and the moving step includes moving said articulating deck relative to said elevating frame.

68-73. (cancelled)

74-75. (Canceled)

76. (withdrawn) The hospital bed of claim 75, wherein said emitter is supported by said first component and said detector is supported for movement with said second component.

77-79. (Canceled)

80. (withdrawn) The hospital bed of claim 74, wherein said detector comprises a force sensing tape switch including elongated upper and lower contacts.

81. (withdrawn) The hospital bed of claim 74, wherein said detector comprises a camera configured to capture images of said second component along said path of travel.

82. (withdrawn) The hospital bed of claim 81, wherein said control unit is configured to compare the images captured by said camera to predefined images to determine the presence of an obstacle within said path of travel.

83-86. (Canceled)

87. (withdrawn) The patient support apparatus of claim 83, wherein said pulsed portion of said wireless signal has a frequency of approximately 57 MHz.

88. (withdrawn) The patient support apparatus of claim 87, wherein said pulsed portion of said wireless signal has a duration of approximately 600 microseconds.

89-94. (cancelled)

95. (NEW) The patient support apparatus of claim 15 wherein the first component is a base frame, the second component is an elevating frame configured to move along the path of travel above the base frame, and wherein the control unit is configured to prevent movement of the elevating frame.

96. (NEW) the patient support apparatus of claim 95 wherein the emitter is supported by the base frame and the detectors are supported by the elevating frame.

97. (NEW) The patient support apparatus of claim 95, wherein the prevented movement is movement of the elevating frame toward the base frame.

98. (NEW) The patient support apparatus of claim 97 wherein the prevented movement is lowering of the elevating frame relative to the base frame.

99. (NEW) The patient support apparatus of claim 15, including a lens interposed between the emitter and the plurality of detectors.

100. (NEW) The patient support apparatus of claim 99, wherein the lens is a Fresnel lens.

101. (NEW) The patient support apparatus of claim 16 wherein the obstacle detection signal is a wireless signal.

102. (NEW) The patient support apparatus of claim 101 wherein the wireless signal is an electromagnetic curtain.

103. (NEW) The patient support apparatus of claim 99 wherein the lens converts an emitter signal into an electromagnetic curtain.

104. (NEW) A patient support apparatus, comprising:
first and second sides extending substantially parallel to each other;
third and fourth sides extending substantially parallel to each other and substantially perpendicular to the first and second sides, the first and second sides cooperating with the third and fourth sides to define corners,
first and second detection units associated respectively with the first and second sides, the first detection unit oriented to emit an obstacle detection signal away from the third side and toward the fourth side, the second detection unit oriented to emit a signal away from the fourth side and toward the third side.

105. (NEW) The bed of claim 104, comprising a third detection unit associated with the third side and an optional fourth detection unit associated with the fourth side, the first, second and third detection units and the fourth detection unit, if present, each comprising an emitter proximate one corner and a detector proximate another corner, the emitter of the third detection unit and the emitter of the fourth detection unit, if present, being oriented to not emit a signal toward a detector of the first or second detection unit.

106. (NEW) The bed of claim 104 wherein the first side is a left side, the second side is a right side, the third side is a foot side and the fourth side is a head side.

107. (NEW) The patient support apparatus of claim 104 wherein each of the detection units comprises a single emitter and a plurality of detectors.

108. (NEW) The patient support apparatus of claim 105 wherein each of the detection units comprises a single emitter and a plurality of detectors.

109. (NEW) The method of claim 61 wherein the obstruction detection signal is a wireless signal.

110. (NEW) The method of claim 61 wherein the obstruction detection signal is an infrared signal.

111. (NEW) The method of claim 61 wherein the obstruction detection signal forms a curtain.